

REMARKS

Claims 1-55 are pending in the present application. Claims 56-61 are added above. Claims 1, 25, and 43 are amended above. No new matter is added by the claim amendments or new claims. Entry is respectfully requested.

Attached hereto is a marked-up version of the changes made to the claims by the current Amendment. The attached page is captioned "**Version with Markings to Show Changes Made**".

The applicant notes with appreciation that the Office Action indicates at paragraph 4 that claims 2 and 3 would be allowable if rewritten in independent form. New independent claim 56 is added above to include the limitations of claim 2. New dependent claim 57 includes the limitations of dependent claim 3. New dependent claims 58-61 include the limitations of dependent claims 4, 8, 9, and 12 respectively. Entry and allowance of claims 56-61 are respectfully requested

Claims 1, 4-24 and 25-42 stand rejected as being unpatentable in view of the combination of Baran, *et al.* (U.S. Patent No. 5,348,453), Cline, *et al.* (U.S. Patent No. 6,126,039) and Sasaki, *et al.* (U.S. Patent No. 5,785,068). Claims 43-55 stand rejected as being unpatentable in view of the combination of Baran, *et al.* and Cline, *et al.* It is respectfully requested that these rejections be reconsidered and removed in view of the foregoing amendments and the following remarks.

The present invention of amended claim 1 is directed to a system comprising a fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions. A position controller controls the position of the pump relative to a substrate and generates a time-duration-based pump control signal. A dispensing controller controls a dispensing operation of the pump, the dispensing controller receiving the time-duration-based pump control signal, and in response to the time-duration-based pump control signal generates an index signal

for the motor for controlling rotation in the motor based on the indexed rotational positions.

The present invention of amended claim 25 is directed to a method for controlling a fluid dispensing operation. The position of a fluid dispensing pump is controlled relative to a substrate at a position controller, the fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions, the position controller generating a time-duration-based pump control signal. A dispensing operation of the pump is controlled at a dispensing controller that receives the time-duration-based pump control signal, and in response, generates an index signal for the motor for controlling rotation in the motor based on the indexed rotational positions.

The present invention of amended claim 43 is directed to a dispensing controller for a fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions. The dispensing controller controls a dispensing operation of a pump. The dispensing controller receives a pump-control signal, and in response, generates an index signal for the motor for controlling rotation in the motor based on the indexed rotational positions. The pump control signal is received from a position controller that controls the position of the pump relative to a substrate. The pump control signal comprises a time-duration-based signal.

In the present invention as claimed in amended claims 1, 25 and 43, the “pump control signal” that is provided to the “dispensing controller” is “time-duration based”. The dispensing controller “receives” this “time-duration” based signal, and “in response”, “generates an index signal” that is used to control the indexing of the motor. In this manner, the systems and methods of the present invention allow for a modern, technologically advanced dispense pump (for example, a closed-loop pump) to be reverse-compatible with a conventional position controller that is designed for, and traditionally used in combination with, a conventional brush-based or clutch-based motor for a pump that relies on a time-based signal for control. (see specification, page 3, line 12 - page 4, line 2 and page 21, line 3 - page 24, line 26).

It is submitted that the combination of references cited in the Office Action fails to teach or suggest the present invention as claimed in amended independent claims 1, 25, and 43. Particularly, no reference alone, or in combination with the others, teaches or suggests receiving a time-duration-based pump control signal, and in response, generating an index signal for the motor as claimed in claims 1, 25, and 43. As stated in the Office Action, Baran discloses a feed-screw-based pump, while Cline discloses a servomotor-based pump in which motor control is hosted at a programmable controller and is based on encoder-based feedback. Sasaki is directed to a substrate spin-cleaning apparatus; no reference was found by the applicant in Sasaki to the use of a “time-duration-based pump control signal generated by the position controller” as stated in the Office Action. In any event, even assuming that Sasaki does teach such a feature, none of the references, alone, or in combination, teach or suggest the receipt of a “time-duration-based” pump control signal at a dispensing controller, and “in response”, generating an “index signal” for controlling the “indexed rotational positions” of a dispense pump as claimed in claims 1, 25, and 43.

Accordingly, reconsideration of the rejections and allowance of amended independent claims 1, 25, and 43 are respectfully requested.

With regard to the various dependent claims 2-24, 26-42 and 44-55, it follows that these claims should inherit the allowability of the independent claims from which they depend.

Closing Remarks

It is submitted that all claims are in condition for allowance, and such allowance is respectfully requested. If prosecution of the application can be expedited by a telephone conference, the Examiner is invited to call the undersigned at the number given below.

Respectfully submitted,

Date: April 11, 2007
Mills & Onello, LLP
Eleven Beacon Street, Suite 605
Boston, MA 02108
Telephone: (617) 994-4900, Ext. 4902
Facsimile: (617) 742-7774
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Anthony P. Onello, Jr.
Registration Number 38,572
Attorney for Applicant

Version with Markings to Show Changes Made

In the Claims:

Claims 1, 25, and 43 are amended above as follows:

1. (Amended) A system comprising:

 a fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions;

 a position controller for controlling the position of the pump relative to a substrate, the position controller generating a time-duration-based pump control signal; and

 a dispensing controller for controlling a dispensing operation of the pump, the dispensing controller receiving the time-duration-based pump control signal, and in response to the time-duration-based pump control signal [initiating the dispensing operation in response to the pump control signal by] generating an index signal for the motor for controlling [initiating] rotation in the motor based on the indexed rotational positions.

25. (Amended) A method for controlling a fluid dispensing operation comprising:

 controlling the position of a fluid dispensing pump relative to a substrate at a position controller, the fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions, the position controller generating a time-duration-based pump control signal; and

 controlling a dispensing operation of the pump at a dispensing controller that [initiates the dispensing operation in response to the pump control signal by] receives the time-duration-based pump control signal, and in response, generates [generating] an index signal for the motor for controlling [initiating] rotation in the motor based on the indexed rotational positions.

43. (Amended) A dispensing controller for a fluid dispensing pump including a feed screw driven by a motor having indexed rotational positions, the dispensing controller for controlling a dispensing operation of a pump, the dispensing controller receiving a pump-control signal, and in response, [initiating the dispensing operation in response to a pump control signal by] generating an index signal for the motor for controlling [initiating] rotation in the motor based on the indexed rotational positions, the pump control signal received from a position controller that controls the position of the pump relative to a substrate, the pump control signal comprising a time-duration-based signal.